ABOUT US

OPTOTECH CABLES (PVT) LIMITED is an ISO 9001: 2015 certified leading manufacturer of optical fiber cables in Pakistan, offering expertise to assist corporate clients in achieving their goals.

At OPTOTECH, we understand the importance of craftsmanship in the production of optical fiber cables. Our highly trained engineers & technicians maintain the quality and consistency from the very first step of the production process.

We have state-of-the-art automated production lines which ensures that each product meets the required design, performance, specifications in assistance with the stringent quality standards implementation.

OPTOTECH is a Quality consciousness company and we strictly adhere to the international standards such as IEC-60794-1 and ITU-T recommendations, ensuring that our products meet the most stringent industry requirements.

Customer satisfaction is at the core of OPTOTECH's success and remains our top priority. We understand that achieving customer satisfaction requires a combination of factors, including competitive prices, superior design, manufacturing precision, stringent quality control, sound financial management, and prompt services. Moreover, we recognize that team spirit is vital for effectively synthesizing these elements and delivering exceptional results.

We pride ourselves on our commitment to excellence, and we are confident in our ability to meet your specific requirements. We invite you to contact us for any of your telecommunications needs as our team is ready to provide personalized assistance and develop customized solutions to support your business goals.

OPTOTECH

VISION

To lead the way
in enabling optical connectivity through
state-of-the-art technology

MISSION

To be the leading
Optical Fiber Cable manufacturer &
Turnkey solution provider
by maintaining **customer-centric** approach,
delivering **product excellence**
and maintaining **competitiveness**
with **sustainable growth**

CONTENT

Products:

FTTH Passive Components:

Services:

Duct (DC)
Optical Fiber Cable (SM 12-288 Fibers)

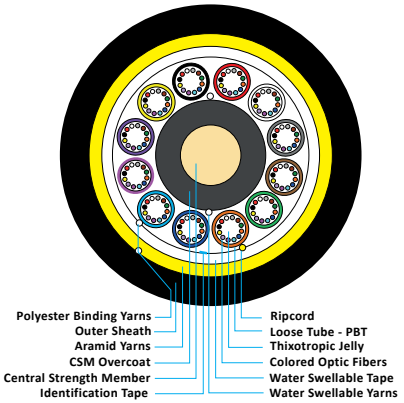
Cable Description

This cable is purpose-built for metropolitan networks and is typically installed within ducts. It is offered with a fiber capacity of up to 288. Customers have the flexibility to choose the desired fiber count and type to match their specific needs. The cable core is fundamentally based on a dry-block construction.

Application and Key features		
1	**Usage Scenarios**	Ideal for Metropolitan Networks
2	**Installation Method**	Suitable for Pulling in Ducts
3	**Cable Design**	Stranded loose tube architecture
4	**No of Fibers**	Supports fiber count up to 288F
5	**Fiber Types**	Complied to ITU-T G.652 D & G.655 C International Standards
6	**Characteristics**	Characterized by its lightweight and flexible nature

Cable cross-section

144 F DC



Cable Parameter

No of Fibers	12 F	24 F	48 F	96 F	144 F	288 F
Fiber per Tube	04 F	06 F	08 F	12 F	12 F	12 F
No. of Tubes	03	04	06	08	12	First :09 Second:15
No. of Fillers	03	02	-	-	-	-
Outer Dia. (mm)	11.0±0.5	11.0±0.5	12.0±0.5	14.0±0.5	16.5±0.5	20±0.5

Cable Item Description

S No.	Item	Description
1	**Fiber**	The cable is based on Single Mode (SM) Fiber as per ITU-T G652 D & G.655 C specifications
2	**Central Strength Member (CSM)**	Fiber Reinforced Plastic (FRP) is used as Non-Metallic Strength Member with diameter **as per design**.
3	**Loose Tube**	1. Loose tube is made up of **Polybutylene Terephthalate (PBT)**, Loose tube will allow free movement of fibers within the tube and protect them from axial or radial stresses 2. No. of Fibers in the tube:02-12 **(as per design)** 3. Loose tube is filled with **Thixotropic Jelly**, the filling compound prevents the ingress of water in to the tube 4. Precise **Excess Fiber length (EFL)** is controlled during the manufacturing
4	**Moisture Barrier**	Water Swellable Yarns & Water Swellable Tape
5	**Identification Tape**	The identification tape is placed with desired printing message **as per customer specification**
6	**Peripheral Strength Member**	Aramid Yarns
7	**Ripcord**	Ripcord
8	**Outer Sheath**	**Cable Grade HDPE** Black color (High Density Polyethylene)

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Fiber Identification

Fiber Identification is made as per TIA/EIA 598-**A**

No	1	2	3	4	5	6	7	8	9	10	11	12
G.652.D G.655.C	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Tube Identification

Loose Tube			Tube Colors					
Outer dia. 12 F-36 F Cable	Inner dia. 12-36 F Cable	Wall Thickness	1	2	3	4	5	6
2.2±0.1 mm	1.4±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White

Loose Tube			Tube Colors										
Outer dia. 48 F-288 F Cable	Inner dia. 48 F-288 F Cable	Wall Thickness	1	2	3	4	5	6	7	8	9	10	11	12
2.5±0.1 mm	1.7±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Sheath Marking

OPTOTECH -MONTHS*YEAR-CUSTOMER NAME DC-144 F-OFC- XXXX-DRUM NO:XXXX	
OPTOTECH	Name of Manufacturer
Month*Year	Manufacturing Month*Year
Customer Name	As per Customer Requirement
DC	Duct Cable
144F-OFC	144 Fibers SM-OFC
XXXX	Length Marking
Drum No:XXXX	Cable Drum Number

- The marking is printed every 1 meter
- Marking Technique (Engraved **Hot foil printing / Inkjet Printing)**
- The color of marking is **white**
- The both cable ends are sealed with heat shrinkable end caps

Mechanical Requirements

No	Item	IEC Ref	Clause	Specification
1	**Longitudinal Water Protection**	IEC 60794-1-F5	7.2.3	Height of water: 1m Sample Length: 3m Time: 24 hour
2	**Tensile Strength**	IEC 60794-1-E1	7.3	3000 N Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km at full load and removal of load
3	**Temperature Range**	IEC 60794-1-F1	7.14	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	**Temperature Cycling Test**	IEC 60794-1-F1	7.14	Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ±5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	**Crush Strength Test**	IEC 60794-1-E3	7.5	2000 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	**Impact Test**	IEC 60794-1-E4	7.6	Weight of 2 kg from 1 meter height No fiber break & damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	**Bending Requirements**	IEC 60794-1-E11	15	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	**Repeated Bending Test**	IEC 60794-1-E11	10	Shall be 15 times the outside diameter of the cable to be tested for 100 cycles at frequency of 30 cycles per minute
9	**Torsion Test**	IEC 60794-1-E7	11	No. of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km

Armoured Buried (BC)
Optical Fiber Cable (SM 12-288 Fibers)

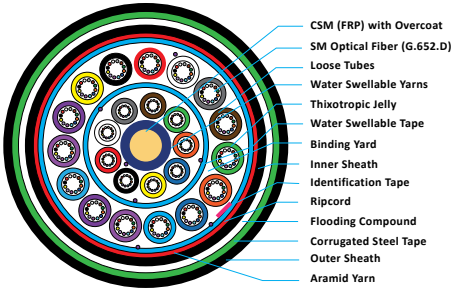
Cable Description

This cable is meticulously (very thoroughly) designed for extensive long-distance transmission networks. It accommodates fiber count ranging from 12F to 288F. The fiber type can be chosen as G.652 D, G.655 C, or a combination tailored to the customer's specifications. The cable's structure follows a stranded loose tube design.

Application and Key features		
1	**Usage Scenarios**	Suitable for long-haul, metropolitan networks and for high tensile strength requirements
2	**Installation Method**	Designed for direct burial
3	**Cable Design**	Stranded loose tube architecture
4	**No of Fibers**	Supports fiber count up to 288
5	**Fiber Types**	Complied to ITU-T G.652 D & G.655 C International Standards
6	**Protection Against Rodents and Mechanical Stress**	Equipped with Copolymer Coated Corrugated Steel Tape and double sheaths
7	**Characteristics**	Demonstrates excellent mechanical resilience, high tensile and crush strength and temperature tolerance

Cable cross-section

288 F BC



Cable Parameter

No. of Fiber	12 F	24 F	48 F	96 F	144 F	288 F
Fiber per Tube	04 F	06 F	08 F	12 F	12 F	12 F
No. of Tubes	03	04	06	08	12	First layer:09 Second:15
No. of Fillers	03	02	-	-	-	-
Outer Dia. (mm)	14.5±0.5	14.5±0.5	15.5±0.5	17.5±0.5	20.5±0.5	25.5±0.5

Cable Item Description

S No.	Item	Description
1	Fiber	The cable is based on Single Mode (SM) Fiber as per ITU-T G.652 D & G.655 C
2	Central Strength Member (CSM)	Fiber Reinforced Plastic (FRP) is used as Non-Metallic Strength Member with diameter **as per design**.
3	Loose Tube	1. Loose tube is made up of **Polybutylene Terephthalate (PBT)**, Loose tube will allow free movement of fibers within the tube and protect them from axial or radial stresses 2. No. of Fibers in the tube:02-12 **(as per design)** 3. Loose tube is filled with **Thixotropic Jelly**, the filling compound prevents the ingress of water in to the tube 4. Precise **Excess Fiber length (EFL)** is controlled during the manufacturing
4	First Moisture Barrier	Dry Water Blocking Technology is used
5	Identification Tape	The identification tape is placed with desired printing message **as per customer specification**
6	Peripheral Strength Member	Aramid Yarns are used as Peripheral Strength Member to provide the tensile strength
7	Ripcord	Ripcord
9	Second Moisture Protection	Aluminum Tape (optional)
10	Armoring	Copolymer corrugated steel tape
11	Inner Sheath	**Cable Grade MDPE** Black color (Medium Density Polyethylene)
12	Outer Sheath	**Cable Grade HDPE** Black color (High Density Polyethylene)

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Fiber Identification

Fiber Identification is made as per TIA/EIA 598-**A**

No	1	2	3	4	5	6	7	8	9	10	11	12
G.652.D G.655.C	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Tube Identification

Loose Tube			Tube Colors					
Outer dia. 12 F-36 F Cable	Inner dia. 12-36 F Cable	Wall Thickness	1	2	3	4	5	6
2.2±0.1 mm	1.4±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White

Loose Tube			Tube Colors									
Outer dia. 48F-288 F Cable	Inner dia. 48F-288 F Cable	Wall Thickness	1	2	3	4	5	6	7	8	9	10	11	12
2.5±0.1 mm	1.7±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Sheath Marking

OPTOTECH –MONTH*YEAR-CUSTOMER NAME BC-144 F-OFC-XXXX-DRUM NO:XXXX	
OPTOTECH	Name of Manufacturer
Month*Year	Manufacturing Month*Year
Customer Name	As per Customer Requirement
BC	Buried Cable
144F-OFC	144 Fibers SM-OFC
XXXX	Length Marking
Drum No:XXXX	Cable Drum Number

- The marking is printed every 1 meter
- Marking Technique (Engraved Hot foil printing / Inkjet Printing)
- The color of marking is white
- The both cable ends are sealed with heat shrinkable end caps

Mechanical Requirements

No	Item	IEC Ref	Clause	Specification
1	**Longitudinal Water Protection**	IEC 60794-1-F5	7.2.3	Height of water: 1m Sample Length: 3m Time: 24 hour
2	**Tensile Strength**	IEC 60794-1-E1	7.3	3000 N Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load
3	**Temperature Range**	IEC 60794-1-F1	7.14	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	**Temperature Cycling Test**	IEC 60794-1-F1	7.14	Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ±5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	**Crush Strength Test**	IEC 60794-1-E3	7.5	2500 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	**Impact Test**	IEC 60794-1-E4	7.6	Weight of 2.5 kg from 1 meter height No fiber break& damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	**Bending Requirements**	IEC 60794-1-E11	15	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	**Repeated Bending Test**	IEC 60794-1-E11	10	Shall be 15 times the outside diameter of the cable to be tested for 100 cycles at frequency of 30 cycles per minute
9	**Torsion Test**	IEC 60794-1-E7	11	No. of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km

Double Armoured Buried (DBC) Optical Fiber Cable (SM 12-144 Fibers)

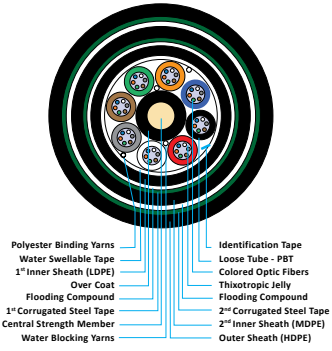
Cable Description

This description pertains to the Triple Jacket Double Armored Optical Fiber Cable, meticulously crafted to meet the challenges of rugged environment due to its Double Armor and Three Jackets, offering enhanced strength and safeguarding against rodents.

Application and Key features		
1	**Usage Scenarios**	Suitable for long-haul, metropolitan networks and for high tensile strength requirements
2	**Installation Method**	Designed for direct burial
3	**Cable Design**	Stranded loose tube
4	**No of Fibers**	Supports a fiber count of up to 144F
5	**Fiber Types**	Complied to ITU-T G.652 D & G.655 C International Standards
6	**Protection Against Rodents and Mechanical Stress**	Equipped with Double Armored Copolymer Coated Corrugated Steel Tape and Aramid yarns and triple sheaths
7	**Characteristics**	Demonstrates excellent mechanical resilience, high tensile and crush strength and environmental performance

Cable cross-section

48 F DBC



Cable Parameter

No. of Fiber	12 F	24 F	48 F	72 F	96 F	144 F
Fiber per Tube	04 F	06 F	08 F	12 F	12 F	12 F
No. of Tubes	03	04	06	06	08	12
No. of Fillers	03	02	-	-	-	-
Outer Dia. (mm)	19.5±0.5	19.5±0.5	21±0.5	21±0.5	24±0.5	28±0.5

Cable Item Description

S No.	Item	Description
1	**Fiber**	The cable is based on Single Mode (SM) Fiber as per ITU-T G.652D & G.655 C specifications
2	**Central Strength Member (CSM)**	Fiber Reinforced Plastic (FRP) is used as Non-Metallic Strength Member with diameter **as per design**.
3	**Loose Tube**	1. Loose tube is made up of **Polybutylene Terephthalate (PBT)**, Loose tube will allow free movement of fibers within the tube and protect them from axial or radial stresses 2. No. of Fibers in the tube:02-12 **(as per design)** 3. Loose tube is filled with **Thixotropic Jelly,** the filling compound prevents the ingress of water in to the tube 4. Controlled **Excess Fiber length (EFL)** is controlled during the manufacturing
4	**Moisture Barrier**	Water Swellable Yarns & Water Swellable Tape
5	**Identification Tape**	The identification tape is placed with desired printing **as per customer specification**
6	**Peripheral Strength Member**	Glass/Aramid Yarns are used as Peripheral Strength Member to provide the tensile strength
7	**Double Armoring**	Copolymer corrugated steel tape
8	**1st Inner Sheath**	**Cable Grade LDPE/MDPE** Black color
9	**2nd Inner Sheath**	**Cable Grade MDPE** Black color (Medium Density Polyethylene)
10	**3rd Outer Sheath**	**Cable Grade HDPE** Black color (High Density Polyethylene)

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Fiber Identification

Fiber Identification is made as per TIA/EIA 598-**A**

No	1	2	3	4	5	6	7	8	9	10	11	12
G.652.D G.655.C	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Tube Identification

Loose Tube			Tube Colors					
Outer dia. 12F-36 F Cable	Inner dia. 12F-36 F Cable	Wall Thickness	1	2	3	4	5	6
2.2±0.1 mm	1.4±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White

Loose Tube			Tube Colors									
Outer dia. 48F-144 F Cable	Inner dia. 48F-144 F Cable	Wall Thickness	1	2	3	4	5	6	7	8	9	10	11	12
2.5±0.1 mm	1.7±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Sheath Marking

OPTOTECH –MONTH*YEAR-CUSTOMER NAME DBC-144 F-OFC-XXXX-DRUM NO:XXXX	
OPTOTECH	Name of Manufacturer
Month*Year	Manufacturing Month*Year
Customer Name	As per Customer Requirement
DBC	Double Armoured Buried Cable
144F-OFC	144 Fibers SM-OFC
XXXX	Length Marking
Drum No:XXXX	Cable Drum Number

- The marking is printed every 1 meter
- Marking Technique (Engraved Hot foil printing / Inkjet Printing)
- The color of marking is white
- The both cable ends are sealed with heat shrinkable end caps

Mechanical Requirements

No	Item	IEC Ref	Clause	Specification
1	**Longitudinal Water Protection**	IEC 60794-1-F5	7.2.3	Height of water: 1m Sample Length: 3m Time: 24 hour
2	**Tensile Strength**	IEC 60794-1-E1	7.3	3000 N Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load
3	**Temperature Range**	IEC 60794-1-F1	7.14	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	**Temperature Cycling Test**	IEC 60794-1-F1	7.14	Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ±5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	**Crush Strength Test**	IEC 60794-1-E3	7.5	≥ 2500 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	**Impact Test**	IEC 60794-1-E4	7.6	Weight of 2.5kg from 1 meter height No fiber break& damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	**Bending Requirements**	IEC 60794-1-E11	15	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	**Repeated Bending Test**	IEC 60794-1-E11	10	Shall be 15 times the outside diameter of the cable to be tested for 100 cycles at frequency of 30 cycles per minute
9	**Torsion Test**	IEC 60794-1-E7	11	No.of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km

All Dielectric Self Supporting (ADSS-AC) Optical Fiber Cable (SM 08-144 Fibers)

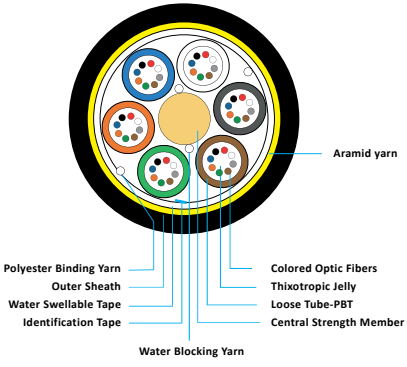
Cable Description

This cable is specifically designed for metropolitan networks and is suitable for aerial applications. It is accessible with a fiber capacity of up to 144F. Customers have the freedom to choose both the desired fiber count and fiber type according to their needs, with a maximum of 144 fibers achievable. It has been designed with enhanced tensile strength. The cable core maintains its foundation in dry-block construction principles.

Application and Key features		
1	**Usage Scenarios**	Well-suited for Aerial/Metropolitan Networks
2	**Installation Method**	Suitable for both Aerial and FTTH applications
3	**Cable Design**	Stranded loose tube architecture (Dry Block Type)
4	**Number of Fibers**	Maximum fiber count up to 144F
5	**Fiber Types**	Complied to ITU-T G.652 D & G.655 C International Standards
6	**Characteristics**	Characterized by its lightweight and flexible nature

Cable cross-section

48 F ADSS-AC



Cable Parameter

No of Fibers	08 F	12 F	24 F	48 F	96 F	144 F
Fiber per Tube	04 F	04 F	06 F	08 F	12 F	12 F
No. of Tubes	02	03	04	06	08	12
No. of Fillers	03	02	01	-	-	-
Outer Dia. (mm)	10.5±0.5	10.5±0.5	10.5±0.5	12±0.5	14.0±0.5	18.1±0.5

Cable Item Description

S No.	Item	Description
1	**Fiber**	The cable is based on Single Mode (SM) Fiber as per ITU-T G.652 D & G.655 C specifications
2	**Central Strength Member (CSM)**	Fiber Reinforced Plastic (FRP) is used as Non-Metallic Strength Member with diameter **as per design**.
3	**Loose Tube**	1. Loose tube is made up of **Polybutylene Terephthalate (PBT)**, Loose tube will allow free movement of fibers within the tube and protect them from axial or radial stresses 2. No. of Fibers in the tube:02-12 **(as per design)** 3. Loose tube is filled with **Thixotropic Jelly**, the filling compound prevents the ingress of water in to the tube 4. Precise **Excess Fiber length (EFL)** is controlled during the manufacturing
4	**Moisture Barrier**	Water Swellable Yarns & Water Swellable Tape
5	**Identification Tape**	The identification tape is placed with desired printing message **as per customer specification**
6	**Peripheral Strength Member**	Aramid Yarn
7	**Ripcord**	Ripcord
8	**Outer Sheath**	**Cable Grade HDPE** Black color (High Density Polyethylene)

Fiber Identification

Fiber Identification is made as per TIA/EIA 598-**A**

No	1	2	3	4	5	6	7	8	9	10	11	12
G.652.D G.655.C	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Tube Identification

Loose Tube			Tube Colors					
Outer dia. 12F-24 F Cable	Inner dia. 12-24 F Cable	Wall Thickness	1	2	3	4	5	6
2.2±0.1 mm	1.4±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White

Loose Tube			Tube Colors									
Outer dia. 48F-144 F Cable	Inner dia. 48F-144 F Cable	Wall Thickness	1	2	3	4	5	6	7	8	9	10	11	12
2.5±0.1 mm	1.7±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Sheath Marking

OPTOTECH –MONTH*YEAR-CUSTOMER NAME ADSS-144 F-OFC-XXXX-DRUM NO:XXXX	
OPTOTECH	Name of Manufacturer
Month*Year	Manufacturing Month*Year
Customer Name	As per Customer Requirement
ADSS	All Dielectric Self Supporting Cable
144F-OFC	144 Fibers SM -OFC
XXXX	Length Marking
Drum No:XXXX	Cable Drum Number

- The marking is printed every 1 meter
- Marking Technique (Engraved Hot foil printing / Inkjet Printing)
- The color of marking is white
- The cable ends are sealed with heat shrinkable end caps

Mechanical Requirements

No	Item	IEC Ref	Clause	Specification
1	**Longitudinal Water Protection**	IEC 60794-1-F5	7.2.3	Height of water: 1m Sample Length: 3m Time: 24 hour
2	**Tensile Strength**	IEC 60794-1-E1	7.3	3000 N Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load
3	**Temperature Range**	IEC 60794-1-F1	7.14	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	**Temperature Cycling Test**	IEC 60794-1-F1	7.14	Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ± 5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	**Crush Strength Test**	IEC 60794-1-E3	7.5	2000 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	**Impact Test**	IEC 60794-1-E4	7.6	Weight of 2 kg from 1 meter height No fiber break & damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	**Bending Requirements**	IEC 60794-1-E11	15	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	**Repeated Bending Test**	IEC 60794-1-E11	10	Shall be 15 times the outside diameter of the cable to be tested for 100 cycles at frequency of 30 cycles per minute
9	**Torsion Test**	IEC 60794-1-E7	11	No. of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km

Aerial Figure-8 Cables (AC Fig-8)
Optical Fiber Cable (SM 12-144 Fibers)

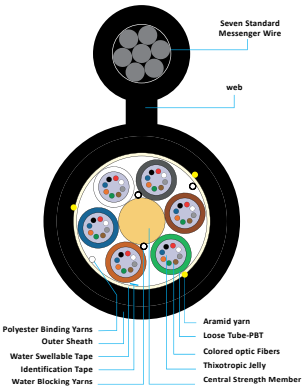
Cable Description

The cable employs a Multi-Tube and Uni Tube construction and prominently features a messenger wire, making it well-suited for FTTH and last mile aerial connectivity.

Application and Key features		
1	**Usage Scenarios**	Ideal for CATV, Railway & harsh environmental conditions
2	**Installation Method**	Suitable for Aerial Application and other relevant needs, designed as a Self-Supporting Cable
3	**Cable Design**	Stranded loose tube design (Dry Block Type)
4	**No of Fibers**	Supports a fiber count of up to 144F
5	**Fiber Types**	Complied to ITU-T G.652 D & G.655 C International Standards
6	**Characteristics**	Exhibits self-supporting capabilities through the integration of a Messenger Wire (Harsh Environment)

Cable cross-section

48 F AC (Fig-8)



Cable Parameter

No of Fibers	12 F	24 F	48 F	96 F	144 F
Fiber Per Tube	04 F	06 F	08 F	12 F	12 F
No. of Tubes	03	04	06	08	12
No. of Fillers	03	02	-	-	-
Outer Dia. (mm)	14.5/7±0.5	14.5/7±0.5	15.5/7±0.5	17/7±0.5	20.5/7±0.5

Cable Item Description

S No.	Item	Description
1	**Fiber**	The cable is based on Single Mode (SM) Fiber as per ITU-T G.652 D & G.655 C specifications
2	**Central Strength Member (CSM)**	Fiber Reinforced Plastic (FRP) is used as Non-Metallic Strength Member with diameter **as per design**.
3	**Loose Tube**	1. Loose tube is made up of **Polybutylene Terephthalate (PBT)**, Loose tube will allow free movement of fibers within the tube and protect them from axial or radial stresses 2. No. of Fibers in the tube:02-12 **(as per design)** 3. Loose tube is filled with **Thixotropic Jelly**, the filling compound prevents the ingress of water in to the tube 4. Precise **Excess Fiber length (EFL)** is controlled during the manufacturing
4	**Moisture Barrier**	Dry Water Blocking Technology is used, the same is achieved through Water Swellable Yarns & Tape
5	**Identification Tape**	The identification tape is placed with desired printing message **as per customer specification**
6	**Peripheral Strength Member**	Aramid Yarns are used as Peripheral Strength Member
7	**Ripcord**	Ripcord
8	**Suspension Strand**	Seven Stranded Galvanized Steel Wire is used as a supporting strength member
9	**Outer Sheath**	**Cable Grade HDPE** Black color (High Density Polyethylene)

Fiber Identification

Fiber Identification is made as per TIA/EIA 598-**A**

No	1	2	3	4	5	6	7	8	9	10	11	12
G.652.D G.655.C	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Fiber Identification

Loose Tube			Tube Colors					
Outer dia. 12F-24 F Cable	Inner dia. 12-24 F Cable	Wall Thickness	1	2	3	4	5	6
2.2±0.1 mm	1.4±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White

Loose Tube			Tube Colors									
Outer dia. 48F-144 F Cable	Inner dia. 48F-144 F Cable	Wall Thickness	1	2	3	4	5	6	7	8	9	10	11	12
2.5±0.1 mm	1.7±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Sheath Marking

OPTOTECH –MONTH*YEAR-CUSTOMER NAME AC FIG-8-144 F-OFC-XXXX-DRUM NO:XXXX	
OPTOTECH	Name of Manufacturer
Month*Year	Manufacturing Month*Year
Customer Name	As per Customer Requirement
AC – FIG-8	Aerial Cables (FIG-8)
144F-OFC	144 Fibers SM -OFC
XXXX	Length Marking
Drum No:XXXX	Cable Drum Number

- The marking is printed every 1 meter
- Marking Technique (Engraved **Hot foil printing / Inkjet Printing)**
- The color of marking is **white**
- The both cable ends are sealed with heat shrinkable end caps

Mechanical Requirements

No	Item	IEC Ref	Clause	Specification
1	**Longitudinal Water Protection**	IEC 60794-1-F5	7.2.3	Height of water: 1m Sample Length: 3m Time: 24 hour
2	**Tensile Strength**	IEC 60794-1-E1	7.3	3500 N Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load
3	**Temperature Range**	IEC 60794-1-F1	7.14	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	**Temperature Cycling Test**	IEC 60794-1-F1	7.14	Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ±5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	**Crush Strength Test**	IEC 60794-1-E3	7.5	2500 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	**Impact Test**	IEC 60794-1-E4	7.6	Weight of 2.5 kg from 1 meter height No fiber break& damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	**Bending Requirements**	IEC 60794-1-E11	15	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	**Repeated Bending Test**	IEC 60794-1-E11	10	Shall be 15 times the outside diameter of the cable to be tested for 100 cycles at frequency of 30 cycles per minute
9	**Torsion Test**	IEC 60794-1-E7	11	No. of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km

CLT Fig-8 Armoured (Fig-8 CLT) Optical Fiber Cable (SM 02-12 Fibers)

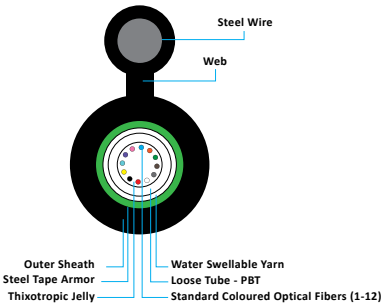
Cable Description

FIG-8 is designed with 02 to 12 fibers. To ensure robustness and tensile strength steel wire is providing physical strength. While options such as HDPE or MDPE are available for jacketing the cable. Steel tape is corrugated to provide mechanical strength to the cable

Application & Key features		
1	**Usage Scenarios**	CATV and similar uses
2	**Installation Method**	Suitable for aerial installations and other similar requirements
3	**Design of Cable**	Single tube design (Dry Block Type) with steel wire at the top of the cable to form Fig-8 design
4	**No of Fibers**	Ranging from 02F to 12F
5	**Fiber Types**	Complied to ITU-T G.652 D & G.655 C International Standards
6	**Characteristics**	Self-supporting with messenger wire and strong mechanical characteristics.
7	**Key Features**	Employing Central Loose Tube (Fig-8) construction, exhibiting smaller diameters compared to alternative constructions. Incorporates Corrugated Steel Tape for enhanced protection against mechanical damage.

Cable cross-section

12 F Fig-8 CLT



Cable Parameter

No. of Fibers	02 F	04 F	08 F	12 F
Outer Dia. (mm)	8/3.5±0.5	8/3.5±0.5	8/3.5±0.5	8/3.5±0.5

Cable Item Description

S No.	Item	Description
1	**Fiber**	The cable is based on Single Mode (SM) Fiber as per ITU-T G.652 D & G.655 C specifications
2	**Loose Tube**	1. Loose tube is made up of **Polybutylene Terephthalate (PBT)**, Loose tube will allow free movement of fibers within the tube and protect them from axial or radial stresses 2. No. of Fibers in the tube:02-12 **(as per design)** 3. Loose tube is filled with **Thixotropic Jelly**, the filling compound prevents the ingress of water in to the tube 4. Precise **Excess Fiber length (EFL)** is controlled during the manufacturing
3	**Moisture Barrier**	Water Swellable yarn
4	**Strength Member**	Steel wire 0.8/1.0 mm each
5	**Armoring**	Copolymer coated steel tape
6	**Outer Sheath**	**Cable Grade HDPE** Black color (High Density Polyethylene)

Fiber Identification

Fiber Identification is made as per TIA/EIA 598-**A**

No	1	2	3	4	5	6	7	8	9	10	11	12
G.652.D G.655.C	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Loose Tube			Tube Color
Outer dia. 02-06 F	Inner dia. 02-06 F	Wall Thickness	1
2.2±0.1 mm Cable	1.4±0.1 mm Cable	0.4 mm	White/Colored (depending upon customer requirements)

Loose Tube			Tube Color
Outer dia. 08-12 F	Inner dia. 08-12 F	Wall Thickness	1
2.5±0.1 mm Cable	1.7±0.1 mm Cable	0.4 mm	White/Colored (depending upon customer requirements)

Sheath Marking

OPTOTECH –MONTH*YEAR-CUSTOMER NAME-CLT FIG-8-12 F-OFC-XXXX-DRUM NO:XXXX	
OPTOTECH	Name of Manufacturer
Month*Year	Manufacturing Month*Year
Customer Name	As per Customer Requirement
CLT FIG-8	Central Loose Tube Figure-8
12 F-OFC	12 Fibers SM-OFC
XXXX	Length Marking
Drum No:XXXX	Cable Drum Number

- The marking is printed every 1 meter
- Marking Technique (Engraved **Hot foil printing / Inkjet Printing)**
- The color of marking is **white**
- The both cable ends are sealed with heat shrinkable end caps

Mechanical Requirements

No	Item	IEC Ref	Clause	Specification
1	**Longitudinal Water Protection**	IEC 60794-1-F5	7.2.3	Height of water: 1m Sample Length: 3m Time: 24 hour
2	**Tensile Strength**	IEC 60794-1-E1	7.3	1000-1200 N Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load
3	**Temperature Range**	IEC 60794-1-F1	7.14	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	**Temperature Cycling Test**	IEC 60794-1-F1	7.14	Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ±5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	**Crush Strength Test**	IEC 60794-1-E3	7.5	1000 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	**Impact Test**	IEC 60794-1-E4	7.6	Weight of 1 kg from 1 meter height No fiber break& damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	**Bending Requirements**	IEC 60794-1-E11	15	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	**Repeated Bending Test**	IEC 60794-1-E11	10	Shall be 15 times the outside diameter of the cable to be tested for 100 cycles at frequency of 30 cycles per minute
9	**Torsion Test**	IEC 60794-1-E7	11	No. of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km

CLT Armoured Cable (CLT)
Optical Fiber Cable (SM 02-12 Fibers)

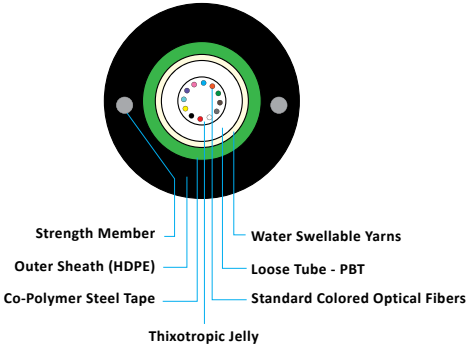
Cable Description

This cable is specifically crafted for LANs and CATV networks where there is a low fiber count requirement. It follows the Central Loose Tube construction design.

Application & Key features		
1	**Usage Scenarios**	CATV and similar uses
2	**Installation Method**	Suitable for aerial installations
3	**Design of Cable**	Single tube design
4	**Number of Fibers**	Ranging from 2 to 12
5	**Fiber Types**	Complied to ITU-T G.652 D International Standards
6	**Characteristics**	Lightweight and Flexible
7	**Key Features**	Employing Central Loose Tube construction, exhibiting smaller diameters compared to alternative constructions. Incorporates Corrugated Steel Tape for enhanced protection against mechanical damage. Equipped with two steel wires to ensure essential tensile strength.

Cable cross-section

12 F CLT



Cable Parameter

No of Fibers	02 F	04 F	08 F	12 F
Uni-tube (Single Tube) (Either White or Colored)				
Outer Dia. (mm)	8±0.5	8±0.5	8±0.5	8±0.5

Cable Item Description

S No.	Item	Description
1	**Fiber**	The cable is based on Single Mode (SM) Fiber as per ITU-T G.652 D specifications
2	**Loose Tube**	1. Loose tube is made up of **Polybutylene Terephthalate (PBT)**, Loose tube will allow free movement of fibers within the tube and protect them from axial or radial stresses 2. No. of Fibers in the tube:02-12 **(as per design)** 3. Loose tube is filled with **Thixotropic Jelly**, the filling compound prevents the ingress of water in to the tube 4. Precise **Excess Fiber length (EFL)** is controlled during the manufacturing
3	**Moisture Barrier**	Thixotropic jelly is used in tubes, while WS yarn is used during outer sheath
4	**Strength Member**	2 x Steel wires, of 0.8/1 mm
5	**Rodent protection**	Copolymer coated steel tape
6	**Outer Sheath**	**Cable Grade HDPE** Black color (High Density Polyethylene)

Fiber Identification

Fiber Identification is made as per TIA/EIA 598-**A**

No	1	2	3	4	5	6	7	8	9	10	11	12
G.652.D G.655.C	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Loose Tube			Tube Colors
Outer dia. 02-12 F Cable	**Inner dia. 02-12 F Cable**	**Wall Thickness**	**1**
2.4±0.1 mm	**1.6±0.1 mm**	**0.4 mm**	**Blue**

Sheath Marking

OPTOTECH –MONTH*YEAR-CUSTOMER NAME-CLT-12 F-OFC-XXXX-DRUM NO:XXXX	
OPTOTECH	Name of Manufacturer
Month*Year	Manufacturing Month*Year
Customer Name	As per Customer Requirement
CLT	Central Loose Tube
12F-OFC	12 Fibers SM-OFC
XXXX	Length Marking
Drum No:XXXX	Cable Drum Number

- The marking is printed every 1 meter
- Marking Technique (Engraved **Hot foil printing / Inkjet Printing)**
- The color of marking is **white**
- The both cable ends are sealed with heat shrinkable end caps

Mechanical Requirements

No	Item	IEC Ref	Clause	Specification
1	**Longitudinal Water Protection**	IEC 60794-1-F5	7.2.3	Height of water: 1m Sample Length: 3m Time: 24 hour
2	**Tensile Strength**	IEC 60794-1-E1	7.3	1000 – 1200 N Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load
3	**Temperature Range**	IEC 60794-1-F1	7.14	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	**Temperature Cycling Test**	IEC 60794-1-F1	7.14	Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ±5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	**Crush Strength Test**	IEC 60794-1-E3	7.5	1000 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	**Impact Test**	IEC 60794-1-E4	7.6	Weight of 1 kg from 1 meter height No fiber break& damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	**Bending Requirements**	IEC 60794-1-E11	15	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	**Repeated Bending Test**	IEC 60794-1-E11	10	Shall be 15 times the outside diameter of the cable to be tested for 100 cycles at frequency of 30 cycles per minute
9	**Torsion Test**	IEC 60794-1-E7	11	No. of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km

FTTH Drop Cable
(Round Profile). 02-12 Fiber

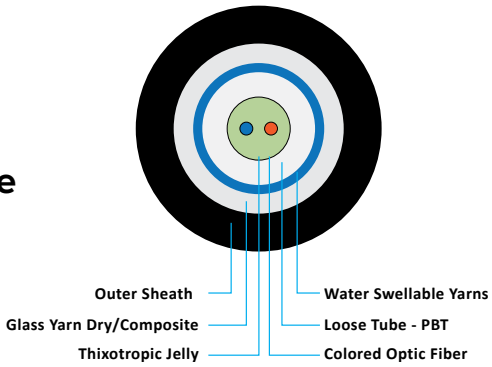
Cable Description

The FTTH Drop Cable comes in a robust, lightweight, and space-efficient design, facilitating seamless data transmission. This easily connectable cable has remarkable tensile strength and resilience. Its flame-retardant jacket enhances fire protection in various environments. Suitable for both indoor and outdoor cabling.

Application and Key features		
1.	**Usage Scenarios**	Indoor/Outdoor Environments, Resistant to Bending, FTTH Implementation
2.	**No of Fibers**	Supports up to 2-12 Fiber
3.	**Fiber Varieties**	Complied to ITU-T G.652 D/G.657 Specification International Standards
4.	**Characteristics**	Elevated Strength, Gentle Texture, Feather light Mass, Supple Flexibility, Impervious to Bending Stress, UV Endurance, and Water Repellence

Cable cross-section

02 F FTTH Drop Cable



Cable Parameter

No of fibers	02-12 F
Sheath Thickness (mm)	1.2±0.2
Outer dia. (mm)	5.5±0.3
Minimum Recommended Sag	1 %
Span Length	≤ 50 meters
Cable Weight	25-35 kg approx.

Cable Item Description

S No.	Item	Description
1	Fiber	The cable is based on Single Mode (SM) Fiber as per ITU-T G.652 D/G-657 specifications
2	Loose Tube	1. Loose tube material is **Polybutylene Terephthalate (PBT)**, which allow free movement of fibers within the tube and protect them from axial or radial stresses 2. Loose tube is filled with **Thixotropic Jelly**, the filling compound prevents the ingress of water in to the tube 3. Precise / controlled **Excess Fiber length (EFL)** is controlled during the manufacturing
3	Strength Member	Aramid/Glass Yarn is used as Non-Metallic strength members
4	Outer Sheath	**Cable Grade HDPE** Black color (High Density Polyethylene)

Fiber Identification

Fiber Identification is made as per TIA/EIA 598-**A**

No	1	2
G.652 D / G.657 A2	Blue	Orange

Loose Tube			
Outer dia.	Inner dia.	Wall Thickness	1
2.5±0.1 mm	1.7±0.1 mm	0.4 mm	White

Cable Sheath Marking

OPTOTECH -MONTH*YEAR-CUSTOMER NAME - FTTH ROUND DROP-02 F-OFC-XXXX-DRUM NO:XXXX	
OPTOTECH	Name of Manufacturer
Month*Year	Manufacturing Month*Year
Customer Name	As per customer requirements
Cable Code	FTTH Round Drop Aerial
02F-OFC	02 Fibers SM-OFC
XXXX	Length Marking
Drum No:XXXX	Cable Drum Number

- The marking is printed after every 1 meter
- Marking Technique (Engraved **Hot foil printing / Inkjet Printing)**
- The color of marking is **white**
- Both cable ends are sealed with heat shrinkable end caps

Mechanical Requirements

No	ITEM	Specification
1	**Operating Temperature**	-10 to 70 °C
2	**Minimum Bending Radius**	Static: 10xOD without load Dynamic: 20xOD with load
3	**Tensile Strength**	1000 N
4	**Crush Resistance**	1000 N

Drop Cable
Outdoor/Indoor 02-12 Fiber

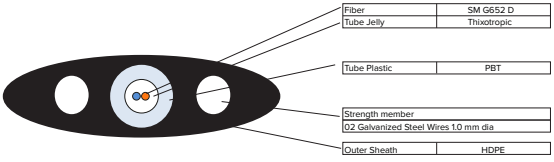
Cable Description

Oval Drop Cable design has an exclusively dielectric composition, comprised of Black MDPE with integrated Fiber Reinforced Plastic (FRP) within the sheath wall. This innovative design renders the cable self-supporting, lending its adaptability for installation aerial and FTTH applicable.

Application and Key features		
1	**Usage Scenarios**	Fiber drop cables find common use in linking the fiber terminal to residential or commercial structures, catering to outdoor scenarios.
2	**Installation Method**	This cable can be installed either Aerial or FTTH applicable
3	**Cable Design**	Safeguarded by dual parallel strength elements galvanized steel wire (metallic),
4	**No of Fibers**	Supports a fiber count of up to 02-12
5	**Fiber Types**	Complied to ITU-T G.652 D International Standards
6	**Characteristics**	These cables are meticulously designed to endure even the harshest environmental elements, such as sunlight, high temperatures, freezing cold, moisture.

Cable cross-section

02 F
Outdoor/Indoor



Cable Parameter

S No.	Parameter	Detail
1	Fiber Type	G.652 D
2	No. of Fiber	02-12
3	Loose Tube material	PBT
4	Strength Member	2 x Galvanized steel wires/FRP dia 1.0 mm
5	Cable Dimensions	6.0x3.5 mm ± 0.5

Cable Item Description

S No.	Item	Description
1	**Fiber**	The cable is based on Single Mode (SM) Fiber as per **ITU-T G.652 D** specifications
2	**Strength Member**	02 Fiber Reinforced Plastic (FRP)
3	**Outer Sheath**	**Cable grade Black HDPE** (High Density Polyethylene) is used as outer sheath
4	**Loose Tube**	1. Loose tube is made up of **Polybutylene Terephthalate (PBT)**, Loose tube will allow free movement of fibers within the tube and protect them from axial or radial stresses 2. No. of Fibers in the tube:02 3. Loose tube is filled with **Thixotropic Jelly**, the filling compound prevents the ingress of water in to the tube 4. Precise **Excess Fiber length (EFL)** is provided during the manufacturing

Fiber Identification

Fiber Identification is made per TIA/EIA 598-**A**

No	1	2	3	4	5	6	7	8	9	10	11	12
G.652.D	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Loose Tube			Tube Colors
Outer dia. 02-12 F	Inner dia. 02-12 F	Wall Thickness	1
2.4±0.1 mm	1.6±0.1 mm	0.4 mm	Blue

Sheath Marking

OPTOTECH -MONTH*YEAR-CUSTOMER NAME- OUTDOOR DROP CABLE-02 F-OFC-XXXX-DRUM NO:XXXX	
OPTOTECH	Name of Manufacturer
Month*Year	Manufacturing Month*Year
Customer Name	As per customer requirements
Cable Code	Outdoor Drop Cable
02F-OFC	02 Fibers SM-Optical Fiber Cable
XXXX	Length Marking
Drum No:XXXX	Cable Drum Number

- The marking is printed every 1 meter
- Marking Technique (Engraved Hot foil printing / Inkjet Printing)
- The color of marking is white
- The both cable ends are sealed with heat shrinkable end caps

Mechanical Requirements

No	Item	Specification
1	**Operating Temperature**	-10 to 70 °C
2	**Tensile Strength**	800-1000 N
3	**Crush Resistance**	500 N

The properties of SM optical fiber (ITU-T G.652 D)

Item	Specification
Fiber Type	SM (ITU-T G652 D)
Dimensions	
Mode Field Diameter @1310 nm @1550 nm	 9.2±0.4 μm 10.4±0.8 μm
Cladding Diameter	125±1 μm
Primary Coating Diameter	250±10 μm
Cladding Non-Circularity	≤ 1%
Core-Clad Concentricity error	≤ 0.5 μm
Coating-Cladding Concentricity	≤ 12 μm
Fiber Curl	≥ 4m radius of curvature
Cable Optical Specifications	
Average Attenuation of Cable @1310 nm @ 1550 nm	 ≤ 0.35 dB/km ≤ 0.22 dB/km
Attenuation vs Wavelength 1285-1330 nm reference 1525-1575 nm reference	 0.03 dB/km 0.02 dB/km
Attenuation Uniformity	No localized discontinuity in excess of 0.1 dB at any of the designed length
Fiber cut-off wavelength	1150 nm to 1310 nm
Cable cut-off wavelength	≤ 1260 nm
Chromatic Dispersion	
Chromatic Dispersion	≤ 3.5 ps/(nm.km) @1285-1330 nm ≤ 18 ps/(nm.km) @1550 nm
Zero dispersion Wavelength	1310 nm≤ λ_0 ≤1324 nm
Zero dispersion slope	≤ 0.092 ps/(nm^2.km)
Polarization Mode Dispersion (PMD)	
Maximum Individual fiber PMD Coefficient	≤ 0.2 ps/(√ km)
Mechanical Specifications	
Fiber Tensile Strength	≥ 400 MPa
Performance Characteristics	
Effective group index of refraction	1.4670 (1310 nm) 1.4677 (1550 nm)

The properties of (ITU-T G.655 C)

No	Characteristics	Conditions	Specified Values	Units
Optical Characteristics				
1	Attenuation	1550 nm 1625 nm	≤ 0.22 ≤ 0.24	[dB/km] [dB/km]
2	Attenuation vs. Wavelength Max. α difference	1525～1575 nm	≤ 0.02	[dB/km]
3	Dispersion coefficient	1530～1565 nm 1565～1625 nm	≥ 2.0 ≤6.0 ≥ 4.5 ≤11.2	[ps/(nm·km)] [ps/(nm·km)]
4	Zero dispersion wavelength		≤ 1520	[nm]
5	Dispersion slope at 1550 nm Typical dispersion slope at 1550 nm		≤ 0.084 0.075	[ps/(nm^2·km)] [ps/(nm^2·km)]
6	PMD Maximum Individual Fibre Link Design Value (M=20, Q=0.01%) Typical Value		 ≤ 0.2 ≤ 0.08 0.04	 [ps$\sqrt{}$km] [ps$\sqrt{}$km] [ps$\sqrt{}$km]
7	Cable cutoff wavelength λ_{cc}		≤ 1450	[nm]
8	Mode field diameter (MFD)	1550 nm	9.1～10.1	[μm]
9	Effective group index of refraction (N_{eff})	1550 nm 1625 nm	1.469 1.469	
10	Point discontinuities	1550 nm	≤ 0.05	[dB]
Geometrical Characteristics				
1	Cladding diameter		125.0±0.7	[μm]
2	Cladding non-circularity		≤ 1.0	[%]
3	Coating diameter		245±7	[μm]
4	Coating-cladding concentricity error		≤ 12.0	[μm]

5	Coating non-circularity		≤ 6.0	[%]
6	Core-cladding concentricity error		≤0.6	[µm]
7	Curl (radius)		≥4	[m]
Environmental Characteristics (1550 nm & 1625 nm)				
1	Temperature dependence induced attenuation at	-60°C to +85°C	≤ 0.05	[dB/km]
2	Temperature-humidity cycling Induced attenuation at	-10°C to +85°C, 98% RH	≤ 0.05	[dB/km]
3	Watersoak dependence Induced attenuation at	23°C for 30 days	≤ 0.05	[dB/km]
4	Damp heat dependence Induced attenuation at	85°C and 85%RH for 30 days	≤ 0.05	[dB/km]
5	Dry heat aging at	85°C	≤ 0.05	[dB/km]
Mechanical Specification				
1	Proof test	Off line	≥ 9.0 ≥ 1.0 ≥ 100	[N] [%] [kpsi]
2	Macro-bend induced attenuation 1 turn around a mandrel of 32 mm diameter 100 turns around a mandrel of 50 mm diameter 100 turns around a mandrel of 60 mm diameter	 1550 nm 1310 nm & 1550 nm 1625 nm	 ≤ 0.05 ≤ 0.05 ≤ 0.05	 [dB] [dB] [dB]
3	Coating strip force	Typical average force Peak force	1.5 ≥ 1.3 ≤ 8.9	[N] [N]
4	Dynamic stress corrosion susceptibility parameter n_d		≥ 27	

Bow Type Drop Cable
02 Fiber Self Supporting

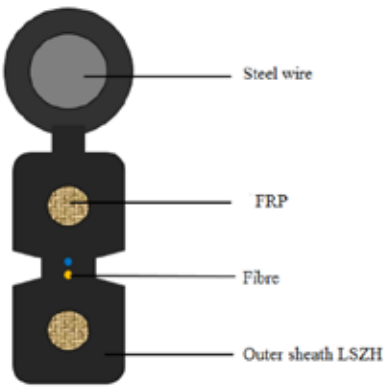
Cable Description

The Self-Supporting Bow Type Drop Cable has been meticulously (thoroughly examined) crafted with a compact meter length to facilitate with easy splicing, installation, and maintenance. With its distinctive butterfly-shaped and flat configuration, it significantly simplifies the drop cable structure while maintaining a lightweight profile.

Application and Key features		
1	**Usage Scenarios**	Perfectly suited for FTTH applications
2	**Cable Design**	Safeguarded by dual parallel strength elements crafted from FRP (non-metallic) and steel wire (metallic), this design ensures effective protection and offers robust resistance against crushing forces
3	**No of Fibers**	Supports fiber count up to 04
4	**Fiber Types**	Complied to ITU-T G.657 A1/A2 Fibers
5	**Characteristics**	Excellent mechanical and environmental performance

Cable cross-section

02 F BDC



Cable Parameter

Parameter		Detail
Fiber	No of Fiber	2
	Color	Blue, Orange
	Type	G.657.A1/A2
Steel wire	Material	Steel
Sheath	Material	LSZH
	Color	Black
Cable Size (H×W) (mm)		(2.0±0.2) × (5.0±0.2)
Cable weight (kg/km)		18
Minimum bending diameter(mm)	Static(Rip off steel wire)	7.5
	Dynamic	30

Cable Item Description

S No.	Item	Description
1	**Fiber**	The cable is based on Single Mode (SM) Fiber as per **ITU-T G.657 A1/A2** specifications
2	**Strength Member**	Strength Member **(STEEL WIRE)**
3	**Sheathing**	**Fire Retardant Black LSZH** (Low Smoke Zero Halogen) is used
4	**Messenger Wire**	Steel Wire: 1 mm

Fiber Identification

Fiber Identification is made as per TIA/EIA 598-**A**

No	1	2
G.657.A1/A2	Blue	Orange

Sheath Marking

OPTOTECH -MONTH*YEAR-CUSTOMER NAME- SELF SUPPORTING BOW TYPE DROP CABLE-02F-OFC-XXXX-DRUM NO:XXXX	
OPTOTECH	Name of Manufacturer
Month*Year	Manufacturing Month*Year
Customer Name	As per customer requirements
Cable Code	Self-Supporting Bow Type drop cable
02F-OFC	02 Fibers SM-Optical Fiber Cable
XXXX	Length Marking
Drum No:XXXX	Cable Drum Number

- The marking is printed every 1 meter
- Marking Technique (**Laser / Inkjet Printing)**
- The color of marking is **white**
- The both cable ends are sealed with heat shrinkable end caps

Mechanical Requirements

No	Item	Specification
1	**Operating Temperature**	-10 to 70 °C
2	**Minimum Bending Radius**	Static: 7.5xOD rip off steel wire Dynamic: 30xOD with load

3	**Tensile Strength**	800 N
4	**Crush Resistance**	500 N

Bow Type Drop Cable (Indoor)

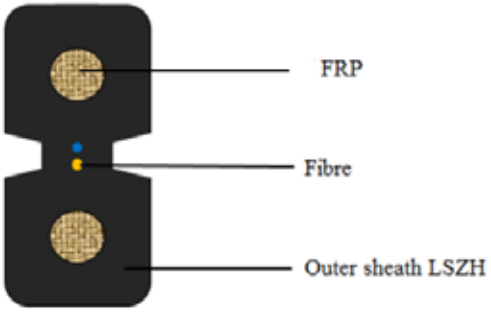
Cable Description

The Bow Type Drop Cable has been meticulously designed to facilitate with easy splicing, installation, and maintenance for FTTH networks. With its distinctive butterfly-shaped and flat configuration, it significantly simplifies the drop cable structure while maintaining a lightweight profile.

Application and Key features		
1	**Usage Scenarios**	Perfectly suited for FTTH networks for indoor installation
2	**Installation Method**	This cable can be installed for FTTH networks
3	**Cable Design**	Safeguarded by dual parallel strength elements crafted from FRP (non-metallic)
4	**No of Fibers**	Supports fiber count up to 04
5	**Fiber Types**	Complied to ITU-T G.657 A1 and G.657 A2 fibers
6	**Characteristics**	Excellent mechanical and environmental performance

Cable cross-section

02 F BDC-Indoor



Cable Parameter

Parameter		Detail
Fiber	No of Fiber	2
	Color	Blue, Orange
	Type	G.657.A1/A2
Strength member	Material	Steel wire/FRP
Sheath	Material	LSZH
	Color	Black
Cable Size (H×W) (mm)		(2.0±0.2) × (5.0±0.2)
Cable weight (kg/km)		12
Minimum bending diameter(mm)	Static	7.5
	Dynamic	30

Cable Item Description

S No.	Item	Description
1	**Fiber**	The cable is based on Single Mode (SM) Fiber as per **ITU-T G.657 A1/A2** specifications
3	**Sheathing**	**Fire Retardant Black LSZH** (Low Smoke Zero Halogen) is used

Fiber Identification

Fiber Identification is made as per TIA/EIA 598-**A**

No	1	2
G.657.A1/A2	**Blue**	**Orange**

Sheath Marking

OPTOTECH -MONTH*YEAR-CUSTOMER NAME- BOW TYPE DROP CABLE-02F-OFC-XXXX-DRUM NO:XXXX	
OPTOTECH	Name of Manufacturer
Month*Year	Manufacturing Month*Year
Customer Name	As per customer requirements
Cable Code	Bow Type drop cable
02F-OFC	02 Fibers SM-Optical Fiber Cable
XXXX	Length Marking
Drum No:XXXX	Cable Drum Number

- The marking is printed every 1 meter
- Marking Technique (**Laser / Inkjet Printing)**
- The color of marking is **white**
- The both cable ends are sealed with heat shrinkable end caps

The properties of SM optical fiber (ITU-T G.657 A1/A2)

Item	**Specification**
Fiber Type	SM (ITU-T G.657 A1/A2)
Dimensions	
Mode Field Diameter @1310 nm @1550 nm	 8.8±0.4 µm 9.8±0.5 µm
Cladding Diameter	125±0.7 µm
Primary Coating Diameter	250±10 µm
Cladding Non-Circularity	≤ 0.7%
Core-Clad Concentricity error	≤ 0.5m µm
Coating-Cladding Concentricity	≤ 12 µm

Cable Optical Specifications	
Average Attenuation of Cable @1310 nm @ 1550 nm	 ≤ 0.36 dB/km ≤ 0.25 dB/km
Cable cut-off wavelength	≤ 1260 nm
Chromatic Dispersion	
Chromatic Dispersion	≤ 18 ps/(nm.km) @1288-1339 nm ≤ 23 ps/(nm.km) @1550 nm
Zero dispersion Wavelength	1300 nm≤ λ_0 ≤1324 nm
Zero dispersion slope	≤ 0.092 ps/(nm^2.km)
Polarization Mode Dispersion (PMD)	
PMD Coefficient	≤ 0.1 ps/(√ km)
Bending loss performance of OFC	
Bending loss performance of OFC@1550nm	≤ 0.25DB (10 turns around a mandrel of 30 mm diameter)

Mechanical Requirements

No	Item	Specification
1	**Operating Temperature**	-10 to 70 °C
2	**Minimum Bending Radius**	Static: 7.5xOD Dynamic: 30xOD with load
3	**Tensile Strength**	800 N
4	**Crush Resistance**	500 N

Optical Fiber Cable
Packaging and Marking

- **Packaging**
  - Each single length of cable shall be reeled on Fumigated Wooden Drum as per International Standard suitable for long distance shipment
  - Covered by plastic buffer sheet
  - Sealed by strong wooden battens
  - At least 1 m of inside end of cable will be reserved for testing
  - Nominal drum length is **2000,4000,6000m±5%**
  - Customized length can also be provided

- **Cable Identification Documents**
  - Test reports shall be placed with each drum

- **Drum Marking**
  - **Cable drum flanges will bear**
    - Manufacturer's Name
    - Arrow showing the direction of drum roll
    - Cable inner end position indicating arrow

- **Caution-Optical Fiber Cable-Not To Be Laid Flat**
    - Caution plate indicating the correct method for loading, unloading and convey the cable
    - Additional information: (if needed)

- **Marking Plates**
  - Customer Name
  - Cable Type and Length
  - Number of Fibers
  - Drum Number
  - Manufacturer's Name
  - Year of manufacturer
  - Contract Number
  - Gross/Net weight in kilograms

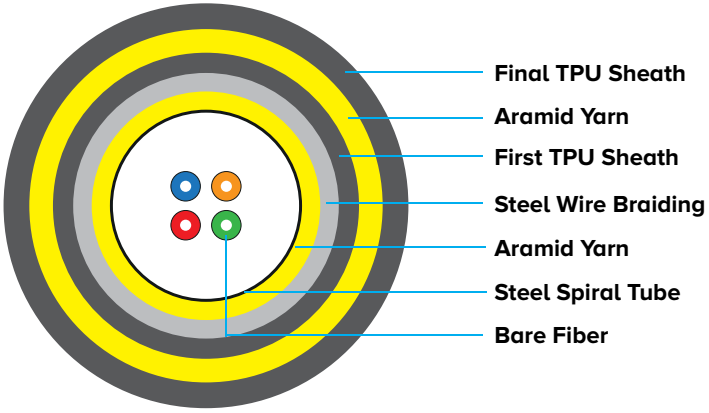
OPTOTECH

Armoured Rapid Deployment Optical Fiber Cable

Armoured rapid deployment cable is particularly designed for the telecom field and harsh environment

- Flexible
- Flame Retardant
- High Crush Resistant
- Wide Operating Temperature Range

Parameters	Values
No. of Fibers/Type	04/SM G.657
Cable Diameter (mm)	5.2 ± 0.3 mm
Weight (Kg/Km)	30 + 10%
Tensile Strength (N)	1000
Crush Resistant (N/10 cm)	1500
Impact (J)	2.2
Operating Temperature	-10 to +70 degree Centigrade

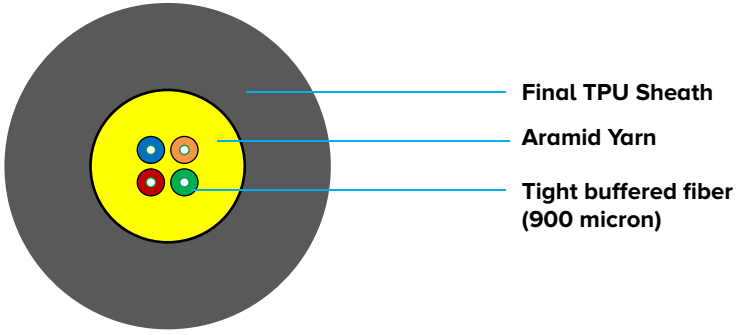


Rapid Deployment Optical Fiber Cable

Rapid deployment cable is particularly designed for the telecom field and harsh environment

- Flexible
- Flame Retardant
- Crush Resistant
- Wide Operating Temperature Range

Parameters	Values
No. of Fibers/Type	04/SM G657
Cable Diameter (mm)	5.0 ± 0.3 mm
Weight (Kg/Km)	30 ± 10%
Tensile Strength (N)	1000
Crush Resistant (N/10 cm)	1500
Impact (J)	2.2
Operating Temperature	-10 to +70 degree Centigrade



Expanded Beam Connector

Description

Hermaphroditic Expanded Beam Connectors are designed for use in the harsh environment, communications, outside broadcast, petrochemical plant, mining, etc., using the latest state-of-the-art Expanded Beam technology

The Expanded-Beam Connectors provide high reliability and robustness over normal connectors

Benefits include easy handling, easy cleaning, interconnection in daisy-chain without using adapters/couplers, etc.

Connector Specifications			
Insertion Loss	Single Mode Fiber: 1 to 4 channels: 2.0dB to 2.5dB max at 1310nm/1550nm		
Return Loss	> 30dB (typical 40dB)		
Durability	3000 Matings minimum		
Operating Temperature	-40°C to +85°C		
Storage Temperature	-55° to +85°C		
Water Immersion	1.0 m		
Free Fall Resistance	500 Falls From 1.2 m height		
Vibration	10-500Hz, 3 directions, 0.75mm amplitude @ 10g acceleration		
Bump	4000 bumps @ 40g acceleration		
Crush Resistance	6.7KN		
Corrosion Resistance	500 Hours Salt Spray		
Cable Retention	1000 (Cable Dependant)		
Weight (approx)		Aluminium	Stainless Steel	Nickel Aluminium Bronze
	Plug:	160g	300g	285g
	Bulkhead:	150g	255g	240g
Connector Shell Material/ Colour	Black anodised Aluminium, Nickel Aluminium Bronze or Stainless Steel. Grip & Boot: Black or Olive Green		

Rapid
Deployment Cable Joint

Description

The Field Tactical Cable Joint offers quick in-field jointing of damaged tactical cable with low loss fusion splices. It can accommodate 1 to 4 fibers splices in one single shell, fully sealed and water resistant.

The shell is made up of stainless steel, having robust design for use in harsh environments.

Specifications	
Dimensions	Length: 260mm (including boots) / Diameter: 20mm
Weight	300g-400g
Operating Temperature	-40°C to +75°C
Storage Temperature	-40°C to +75°C
Water Immersion	1.0 m maximum
Free Fall Resistance	500 Falls from 1.2m height onto concrete
Corrosion Resistance	500 Hours salt spray
Cable Retention	1500 N (cable dependant)

Backpack With Reel

Shoulder-mounted backpack system provides efficient and easy-to-handle method for deployment of short lengths Rapid deployment OFC cables in all types of terrains

- Cable assembly - ready for operation. Laying cable in various landscapes
- Increased cable length carried by an individual
- Use of full or partial cable lengths

Description

- Backpack frame in aluminum, anodized, equipped with handbrakes, excluding reel, including accessory bag with crank for rewinding

Reel with the following features

- Extensible axle for easy storage
- Separate connector compartment
- Protective sheath covering the cable and two belts protecting the cable ends with its connectors
- Reel delivered readymade to use with cable and connectors
- Number of backpack frames compared to the number of reels is depending on the application

Accessories offered

- Preassembled expanded beam connectors. Adapting cables, e.g. from bulkhead to LC, ST or any standard connectors

Material

- Backpack frame in aluminium, anodized green/grey colored
- Accessories bag in canvas
- Reels in aluminum, colored green/grey

Color

- Green/Grey

Vehicle-Mounted
Cable Reels & Reeling Assemblies

Vehicle-mounted reeling assemblies are designed for deployment of medium to long-length rapid deployment cables

- Winding frame in aluminum, colored green/grey for mounting on a vehicle, including
  - accessory bag with crank for rewinding
  - deploying handle for lifting reel in-and-out of winding frame or for hand deploying at vehicle impassable ground
- Various reels of different diameter have the following features:
  - all reels with extensible axle for easy storage
  - reels have separate connector compartment
  - protective sheath covering the cable and two belts protecting the cable ends with its connectors
  - reel delivered readymade to use with cable and connectors

Applications

- Outdoors
- Fast cable deployment in various landscapes from vehicles
- Increased cable length compared to the hand reels or back-pack reels
- Use of full or partial cable length

Material

- Winding frame in aluminium, colored green/grey
- Reels in aluminium, colored green/grey

Accessories offered

- Preassembling with Expanded Beam connectors
- Adapting cables, e.g. from bulkhead to LC, ST or any standrad connectors

Color

- Green/Grey

Packing Boxes

S/N	Packing Items
1	Box for 500 m Reel
2	Box for 1 Km Reel
3	Box for 2 Km Reel
4	Box for Backpack
5	Box for Reeling Assembly 1 Km
6	Box for Reeling Assembly 2 Km

Note: All items will be delivered in locally made wooden boxes framed with aluminium borders for strength.

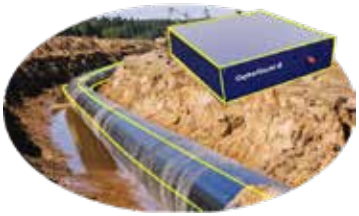
Field OFC Jointing Toolkit

Field jointing Toolkit, packed in a robust box, consists of all tools and consumables required for repair/jointing of damaged rapid deployment cable in field.

S/N	Tool Desription	Qty
1	Blade Cutter	1
2	Buffer Fiber Stripper (3-Hole)	1
3	5.5mm Outer Sheath Cutter	1
4	Crimping Tool (8.1mm Hexagonal)	1
5	Kevlar Cutter	1
6	Wire Cutter	1
7	Scissors to cut Aramid Yarn	1
8	Nose Pliers	1
9	Kimwipes	1
10	IPA Dispenser Bottle	1
11	Ellen Key Set (including 1.25mm and 1.5mm)	1
12	Screw Driver Set (including 1.5mm Philips)	1
13	Tool Box (Empty)	1
14	Spanners 12.0 mm	2
15	Marking Pen	1
16	Scale	1
17	Silicon Sealant	1
18	Petroleum Jelly	1

OPTOTECH

Opto Guard



Opto Guard uses an optical fiber pair for detecting vibration and temperature patterns through Distributed Acoustic Sensing (DAS) and Distributed Temperature Sensing (DTS) technologies. The system uses telecom grade SM fiber for sensing localized events at long distances without complex hardware and on field power. Coherent Rayleigh-backscattering within the fiber is used to detect and accurately locate any perturbation event around the fiber. Whereas, Raman components are processed for determining temperature along the fiber length. Real-time response allows quick remedial action against unwarranted intrusions, tapping, theft, leaks etc. with great reliability and operational safety. Sensor can work in different sensing situations under harsh environments.

Applications

- Pipeline Security
- Asset integrity monitoring
- Perimeter security
- Temperature sensing
- Leak detection

Key Features

- 15-20 m Spatial resolution
- Detect Leaks, vandalism & temperature
- Cable Cut-immunity
- Real-time
- 40 KMs Range per unit
- Low hardware count
- Extensive Software Suite
- Easy installation and calibration

Powerful Software Suite is equipped with intelligent signal processing and intrusion detection algorithm, and provides map based geo-tagging of site along with audio/visual alarms, field health monitoring, electronics health monitoring, intrusion logging and reporting tool.

Module Parameters	Min	Typ	Max	Unit
Distributed Acoustic Sensing				
Sensing Distance		40		Km
Optical cable		G.652 (SMF)		
Frequency response	1	50K	120K	Hz
Spatial Resolution	5	15	20	m
Software Suite		Opto-SENSE		
Communication		RS232/USB		
Distributed Temperature Sensing				
Sensing Range	-100	200	400	°C
Scan time		2		mins
Resolution		0.5		°C
Modulation Parameters				
Operating wavelength		1550		mn
Output signal frequency		200		MHz
Signal Level (digital)		TTL		
Operating voltage		24		VDC
Average optical power		1		W
Peak Average Power		1		W
Insertion Loss		3.5		dB
Extinction Ratio		60		dB
Electrical/Environmental				
Power Consumption		100		W
Power Supply		220		VAC
Operating Temperature	5	25	65	°C
EMI Immunity		Complete		

Smart Sense

Smart Sense interrogation module is based on spectral analysis of reflected light (wavelengths). A bare fiber grating array is connected with it as the sensing element. Within the fiber array, micro-engraved Fiber Bragg Gratings acts as the sensing element. Any change in the temperature, strain, or acceleration is translated into spectral shift of back-reflected light. This spectral shift is detected by Smart Sense for accurate measurements. Smart Sense comes with customized software suite 'Nano Sense' providing GUI, analysis tools, logging and other software support.

Applications

- Model and deformation analysis of structures
- Structural monitoring of Aerial vehicles
- SHM of dams, bridges, and other structures
- Pipeline integrity monitoring
- Predictive maintenance

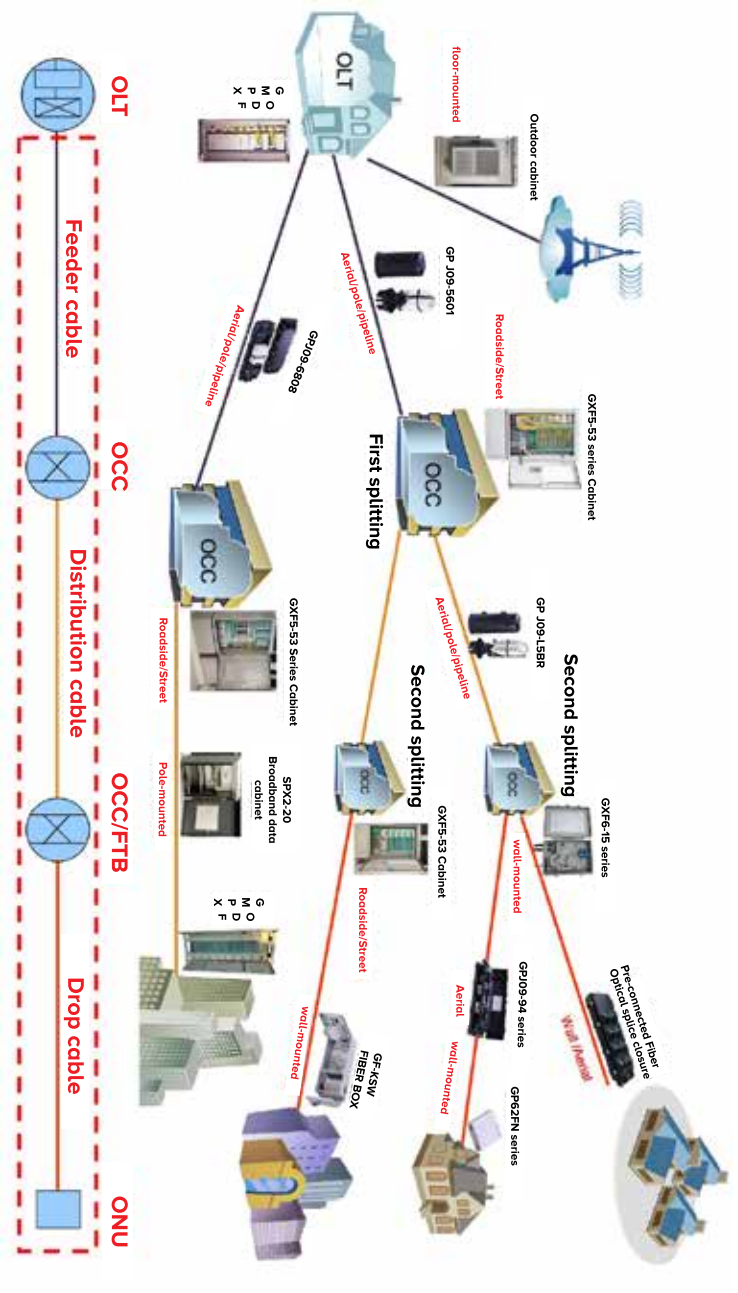
Key Features

- Distributed measurements
- Temperature, strain, acceleration sensing
- Modular design
- High speed interrogation
- Immune to FOG, EMI,RFI
- Extended operational temperature range

Module Parameters	Min	Typ	Max	Unit
Number of Inputs	4	4	8	
Wavelength range	1500	-	1600	nm
Number of channels/Input		16		
Resolution	1	<2	2	pm
Sampling rate	1000	100	1000	Hz
Sensor array length		300		m
Dynamic Range		25		dB
Supply voltage	18	24	30	V
Power Consumption		30		W
Operating temperature Range		0...122	-20...60	°C
Relative humidity	5	-	95	%
Weight		1.5		Kg
Dimension (WxHxD)		198x95x135		mm
Connector Type		FC/APC		
Connectivity				
Software	NanoSENSE (GUI, system configuration, data-logging, and analysis tools)			
Connection method	Ethernet (RJ-45)			
Addressing	TCP/IP			
EMI Immunity	Complete			

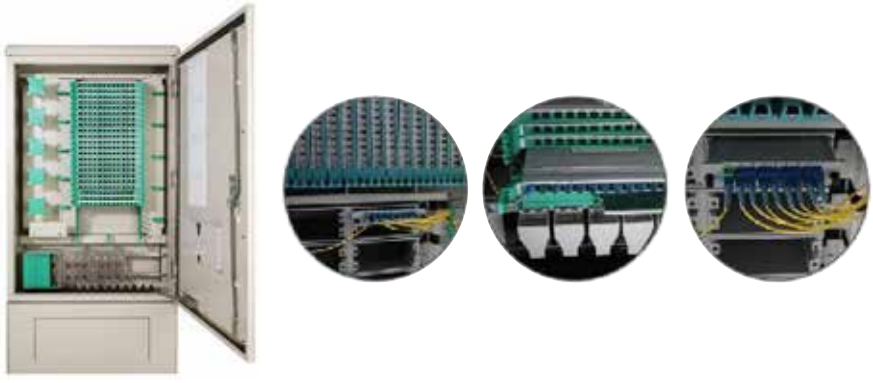
FTTH Passive Components

OPTOTECH ODN Solution



OPTOTECH

GXF-53 Series
Optical Cross-Connect Cabinet

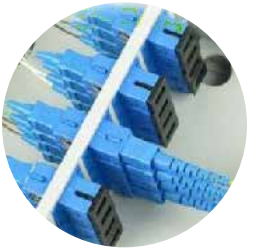


Features

- Fully closed SMC body, modular design provides largest flexibility
- Dust-free, water-free and good corrosion resistance and anti-aging function.
- Jump free design concept to further reduce communication fault point.
- Integrated splice tray with 12F, is suitable for FC, SC, LC adapter.
- For 288F, it can be assembled 6 sets of 1:8 module splitter.
- For 576, it can be assembled 16 sets of 1:32 module splitter.
- Combine functions of fiber termination, scheduling and resource management

Type	Dimension (mm)	Capacity	Application
GXF5-53-288F	765 X 1515 X 340	288F	Outdoor
GXF5-53-S288	530 X 700 X 290	288F	Outdoor
GXF5-53-S288F	765 X 1515 X 340	288F	Outdoor
GXF5-53-S144	1545 X 1450 X 360	144F	Outdoor
GXF5-53-S576F	530 X 700 X 290	576F	Outdoor

Optical Distribution Box



Features

- Total enclosed structure with PC and ABS material, prevent from dust, erosion and aging resistance, and has good safety performance.
- Optical fiber cable, patch cord and pigtail are routed independently to each other without mutual interference.
- Wall mounted and pole mounted two kinds of installation modes can be chosen for both indoor and outdoor using.

Type	Dimension (mm)	Capacity	Outer carton size
GF-KSW-8A	239 X 201.5X77	12F	500X310X440 (6pcs)
GF-KSW-16A	326 X 277.5 X 124	24F	420X650X550 (6pcs)
GF-KSW-24A/B	374 X264 X 112	24F	575X415 X 490 (6pcs)
GF-KSW-48A/B	504 X 374 X 134	48F	565X420X540 (3pcs

Optical Distribution Boxes Family Products

GF-KSW-8A, 12F

GF-KSW-24A/B, 24F

GF-KSW-16A, 24F

GXF6-15N6S, 16F

GF-KSW-48A/B, 48F

GXF6-15N27A/B, 24F

Fiber Joint Closure-In-line

GPJ09-9401 (2*2,36F)

GPJ09-6812 (2*2,72F)

GPJ09-6807 (2*2, 96F)

GPJ09-6806 (2*2,144F)

GPJ09-6601 (3*3,72F)(2*2,144F)

GPJ09-6408 (4*4,144F)

Fiber Joint Closure-Dome (Mechanical sealing)

GPJ09-5603, 48F

GPJ09-5608,72F

GPJ09-5607,96F

GPJOY-5601,144F

GPJ09-L4-BJ

GPJ09-L5-BJ

GPJ09-L6-BJ, 240F

Fiber Joint Closure-Dome (Heat shrink sealing)

GPJ09-5808, 144F

GPJ09-5606,96F

GPJ09-5816,216F

GPJ09-5817-B,360F

L5-BR, 144F

GPJ09-5813

L7-BR, 288F

OFC Deployment Services

OSP Services

OPTOTECH is equipped with a skilled workforce comprising engineers, designers, and technical experts, adeptly capable of managing nationwide tasks encompassing survey and design, network planning, installation, commissioning, and live fiber cable maintenance.

Quality Policy

OPTOTECH's dedication to quality is articulated through our Quality Policy. This policy governs the implementation of all existing management and production systems at OPTOTECH. The core purpose of our Quality Management System is to provide customers with the assurance of quality by showcasing:

- Comprehensive Quality Planning
- Precise Process Control
- Demonstrable Process Capability

The ultimate triumph of any enterprise rests in the realm of customer satisfaction. For OPTOTECH, this satisfaction stands as the foremost priority. Beyond offering competitive pricing, superior design, precision manufacturing, stringent quality control, and prompt services, OPTOTECH also places great importance on the value of teamwork, which is pivotal for harmonizing these essential components.

- OPTICAL FIBER CABLE
- OUTSIDE PLANT WORK
- PASSIVE COMPONENT (FTTH)
- LINK TESTING
- SYSTEM INSTALLATION
- AFTER SALE SERVICES
- NETWORK MAINTENANCE

Experience OPTOTECH For Yourself

The most compelling validation of our commitment to exceptional customer satisfaction emerges through direct engagement with our solutions.

Our confidence extends beyond the role of a supplier of optical fiber cable.
We firmly believe in evolving ourself as your steadfast partner.

Optical Network Maintenance

OPTOTECH has a diverse experience of 15 years in the field of optical fiber network maintenance (ONM). Our ONM teams are 24/7/365 days operational and stationed nationwide offering the SLA of restoring the fiber cuts.
It is very important to note that Fiber optic networks rely on various components like adapters, closures, connectors, and optical fibers to transmit light signals efficiently. OPTOTECH is maintaining optical networks for telecom operators as well as for projects of national interest to troubleshoot and fix issues such as fiber cuts, and high-power loss.

Troubleshooting Fiber Cuts

- Causes: Cuts can occur due to construction, vandalism, natural disasters, rodents, or poor installations.
- Identification: Using tools like OTDRs and FIPs alongside knowledge of the network's layout and equipment locations.
- Locating Cuts: OTDR tests help pinpoint the distance of the cut, while physical evidence and further tests narrow down its exact location.
- Restoration: Depending on the damage, temporary or permanent fixes are implemented. Temporary fixes get services running quickly, but permanent solutions are necessary to prevent recurring problems.

High Loss on Optical Links

- Causes: High loss can stem from connector issues, splices, bends, or cable irregularities.
- Identification: OTDR tests detect losses and locate faults along the link.
- Restoration: OPTOTECH ONM teams remain engaged 24/7 in re-splicing fibers, cleaning or replacing connectors, or replacing damaged sections of cables.

Testing Methods

- OTDR: A crucial tool that sends and analyzes light signals to detect faults.
- FIP: Used to check connector cleanliness and damage.

- Power Meter: Measures power in optical signals.
- Splicing: Joining optical fibers using fusion or mechanical methods.
- Remote Monitoring: Utilizing RTUs to send alerts about fiber status.

OPTOTECH ONM teams assures effective maintenance that involves a blend of smart troubleshooting techniques, knowledge of network architecture, and the use of appropriate testing & measurement equipment. OPTOTECH teams are experience enough to swiftly identify faults, locate their exact positions, and execute suitable restoration methods to ensure optimal network functionality

OPTOTECH SOP for Optical Network Maintenance

- Use FIP to confirm connector tip (end-face) for dirt or damage
- Clean Connector always before patching
- Cover the connector end-face with a cup (cover) when not in use.
- Change damaged connector after confirming with FIP
- Use launch cable with OTDR to get start and end connector loss readings
- Run a section of cable and splice quickly to shorten restoration time of critical links and later restore permanently. (Applicable to where construction work hinders restoration or locating rodent eaten section and not easily locatable within SLA time).
- Bidirectional OTDR test to analyze fully the entire link
- Use of LSPM method to know insertion loss or link loss. Particularly relevant for short links and patchcords, where OTDR may not give accurate readings.

OPTOTECH

Presence Maintenance Teams Nationwide

Islamabad

Punjab:

- Taxila
- Rawalpindi
- Gujar khan
- Gujrat
- Sialkot
- Gujranwala
- Jund
- Faisalabad
- Jhang
- Murree

KPK:

- Chitral
- Upper Dir
- Bajor
- Shabqadar
- Landi Kotal
- Abbottabad
- Peshawar
- Nowshera
- Sadda Parachinar
- Kohat
- Hangu
- Thal
- Karak
- Dera Ismail Khan

Sindh:

- Sukkur
- Khairpur
- Nawabshah
- Hydrabad
- Maymar - Karachi
- North Karachi
- Karachi
- East Karachi
- South Karachi

Quality Control Lab

Crush Machine

Repeated Bending Machine

Impact Test Machine

Power Meter/Light Source

Torsion Test Machine